

We claim:

1. An implantable medical device for the controlled release of drug molecules comprising:
 - a support structure;
 - at least two discrete reservoirs provided in spaced positions across at least one surface of the support structure; and
 - a release system loaded in each of the at least two reservoirs, the release system including drug molecules dispersed in a degradable matrix material,wherein rate of release of the drug molecules from the reservoir is controlled by the matrix material.
2. The implantable medical device of claim 1, wherein the release of the drug molecules from the reservoirs is controlled by the in vivo disintegration of the matrix material.
3. The implantable medical device of claim 2, wherein the disintegration of the degradable matrix material is by dissolution, enzymatic hydrolysis, or erosion.
4. The implantable medical device of claim 1, wherein the matrix material comprises one or more hydrogels or biodegradable polymers.
5. The implantable medical device of claim 4, wherein said one or more biodegradable polymers are selected from the group consisting of poly(amides), poly(esters), poly(anhydrides), poly(orthoesters), poly(carbonates), copolymers thereof, and mixtures thereof.
6. The implantable medical device of claim 4, wherein said one or more biodegradable polymers are selected from the group consisting of poly(lactic acids), poly(glycolic acids), poly(lactic-co-glycolic acids), poly(caprolactones), and mixtures thereof

7. The implantable medical device of claim 1, wherein the drug molecules are heterogeneously dispersed within each reservoir.
8. The implantable medical device of claim 1, wherein the drug molecules are homogeneously dispersed within each reservoir.
9. The implantable medical device of claim 1, wherein the drug molecules comprise one or more therapeutic agents selected from the group consisting of anesthetics, chemotherapeutic agents, hormones, immunomodulators, ion channel regulators, and antibiotics.
10. The implantable medical device of claim 1, wherein the dose of drug molecules in one of the at least two reservoirs is different from the dose of drug molecules in the other of the at least two reservoirs.
11. The implantable medical device of claim 1, wherein the kinetics of release of the drug molecules from one of the at least two reservoirs is different from the kinetics of release of the drug molecules from the other of the at least two reservoirs.
12. The implantable medical device of claim 1, wherein a first drug is in one of the at least two reservoirs and a second, different drug is in the other of the at least two reservoirs.
13. The implantable medical device of claim 1, wherein at least one of the reservoirs comprises two or more layers of the release system.
14. The implantable medical device of claim 13, wherein a first drug is contained in a first layer of the two or more layers, and a second drug is contained in a second layer of the two or more layers.

15. The implantable medical device of claim 1, wherein the at least two reservoirs each comprises at least two layers of a release system and at least one layer of a degradable or soluble material which does not comprise the one or more drugs.
16. The implantable medical device of claim 1, wherein the release system further comprises one or more pharmaceutically acceptable carriers, excipients, or diluents.
17. The implantable medical device of claim 1, further comprising at least two discrete biodegradable reservoir caps, each reservoir cap covering one of the at least two reservoir, and controlling the time of release of the drug molecules from the reservoirs.
18. The implantable medical device of claim 17, wherein one of the reservoir caps is formed of a first material and the other of the at least two reservoir caps is formed of a second material, wherein the first material has a different disintegration rate in vivo compared to the second material.
19. The implantable medical device of claim 17, wherein one of the reservoir caps has a first thickness and the other of the at least two reservoir caps has a second, greater thickness.
20. The implantable medical device of claim 17, wherein at least one of the reservoir caps comprises one or more synthetic polymers.
21. The implantable medical device of claim 1, which provides pulsatile release of the one or more drugs.
22. The implantable medical device of claim 1, comprising at least two rows of the at least two reservoirs in an array in the implantable device.

23. The implantable medical device of claim 22, wherein a first release system is in each of the at least two reservoirs of a first of the at least two rows and a second release system is in each of the at least two reservoirs of the other of the at least two rows, the first release system releasing the one or more drugs at a rate or in a dosage amount different from release of the one or more drugs from the second release system.

24. An implantable medical device for the controlled release of drug molecules comprising:

a support structure;

at least two discrete reservoirs provided in spaced positions across at least one surface of the support structure; and

a release system loaded in each of the at least two reservoirs, the release system including drug molecules dispersed in a non-degradable matrix material,

wherein rate of release of the drug molecules from the reservoir is controlled by the matrix material.

25. The implantable medical device of claim 24, wherein release of the drug molecules from the reservoir is controlled by in vivo diffusion of the drug molecules from the matrix material.

26. The implantable medical device of claim 24, wherein the matrix material comprises one or more hydrogels or synthetic polymers.

27. The implantable medical device of claim 26, wherein said one or more synthetic polymers are selected from the group consisting of poly(ethers), poly(acrylates), poly(methacrylates), poly(vinyl pyrrolidones), poly(vinyl acetates), poly(urethanes), celluloses, cellulose acetates, and poly(siloxanes).

28. The implantable medical device of claim 24, wherein the drug molecules are heterogeneously dispersed within each reservoir.

29. The implantable medical device of claim 24, wherein the drug molecules comprise one or more therapeutic agents selected from the group consisting of anesthetics, chemotherapeutic agents, hormones, immunomodulators, ion channel regulators, and antibiotics.

30. The implantable medical device of claim 24, wherein the dose of drug molecules in one of the at least two reservoirs is different from the dose of drug molecules in the other of the at least two reservoirs.

31. The implantable medical device of claim 24, wherein the kinetics of release of the drug molecules from one of the at least two reservoirs is different from the kinetics of release of the drug molecules from the other of the at least two reservoirs.

32. The implantable medical device of claim 24, wherein a first drug is in one of the at least two reservoirs and a second, different drug is in the other of the at least two reservoirs.

33. The implantable medical device of claim 24, wherein at least one of the reservoirs comprises two or more layers of the release system.

34. The implantable medical device of claim 33, wherein a first drug is contained in a first layer of the two or more layers, and a second drug is contained in a second layer of the two or more layers.

35. The implantable medical device of claim 24, further comprising at least two discrete biodegradable reservoir caps, each reservoir cap covering one of the at least two reservoir and controlling the time of release of the drug molecules from the reservoirs.

36. The implantable medical device of claim 35, wherein one of the reservoir caps is formed of a first material and the other of the at least two reservoir caps is formed of a second material, wherein the first material has a different disintegration rate in vivo compared to the second material.

37. The implantable medical device of claim 35, wherein one of the reservoir caps has a first thickness and the other of the at least two reservoir caps has a second, greater thickness.
38. The implantable medical device of claim 35, wherein at least one of the reservoir caps comprises one or more synthetic polymers.
39. The implantable medical device of claim 24, further comprising at least two discrete non-degradable reservoir caps, each reservoir cap covering one of the at least two reservoirs and further controlling the kinetics of release of the drug molecules from the reservoirs.
40. The implantable medical device of claim 39, wherein at least one of the discrete reservoir caps comprises one or more synthetic polymers.
41. The implantable medical device of claim 24, comprising at least two rows of the at least two reservoirs in an array in the implantable device.
42. The implantable medical device of claim 41, wherein a first release system is in each of the at least two reservoirs of a first row and a second release system is in each of the at least two reservoirs of the other of the at least two rows, the first release system releasing the one or more drugs at a rate or in a dosage amount different from release of the one or more drugs from the second release system.

43. A method for local delivery of drug molecules in a patient, the method comprising:

implanting at a site in a patient a drug delivery device which comprises a support structure, at least two discrete reservoirs provided in spaced positions across at least one surface of the support structure, and a release system loaded in each of the reservoirs, the release system including drug molecules dispersed in a degradable matrix material; and

allowing the matrix material to disintegrate in vivo to release the drug molecules from the reservoirs to the site in a controlled manner.

44. The method of claim 43, wherein the drug delivery device is implanted via a catheter.

45. The method of claim 43, wherein the drug molecules are released from the device in a pulsatile manner.

46. The method of claim 43, wherein the drug molecules are released from the device over a period of time of at least three months.

47. The method of claim 43, wherein one of the at least two reservoirs comprises two or more layers of the release system.

48. The method of claim 43, wherein the kinetics of release of the drug molecules from one of the at least two reservoirs is different than the kinetics of release of the drug molecules from the other of the at least two reservoirs.

49. The method of claim 43, wherein the drug delivery device further comprises at least two discrete degradable reservoir caps, each reservoir cap covering one of the at least two reservoirs and delaying onset of release of the drug molecules therefrom.

50. A method for local delivery drug molecules in a patient, the method comprising:

implanting at a site in a patient a drug delivery device which comprises a support structure, at least two discrete reservoirs provided in spaced positions across at least one surface of the support structure, and a release system loaded in each of the reservoirs, the release system including drug molecules dispersed in a non-degradable matrix material; and

allowing the drug molecules to diffuse from the matrix material in vivo to release the drug molecules from the reservoirs to the site in a controlled manner.

51. The method of claim 50, wherein the drug delivery device is implanted via a catheter.

52. The method of claim 50, wherein the drug molecules are released from the device over a period of time of at least three months.

53. The method of claim 50, wherein the kinetics of release of the drug molecules from one of the at least two reservoirs is different than the kinetics of release of the drug molecules from the other of the at least two reservoirs.

54. The method of claim 50, wherein the drug delivery device further comprises at least two discrete reservoir caps, each reservoir cap covering one of the at least two reservoirs and delaying the onset of release of the drug molecules therefrom.